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Directorate of Nuclear Surety
Technical Note 001-81
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BROKEN ARROW LIST

Prepared By

Major John G. Dean

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INTRODUCTION

This list of Broken Arrow accidents was compiled through the joint efforts of the Directorate of Nuclear Surety (Maj John Dean), the USDOE/Albuquerque Operations Office (Mr. Dave Foster), and FCDNA-JNACC (Maj Jack O'Connell).

In the process of compiling this list all information available to the participants was pooled and discrepancies were resolved as best possible. Several discrepancies involved dates/times. This list uses local times.

Several earlier lists were uncovered in the process of gathering information. Some accidents that appeared in these earlier lists do not fit the definition used here for a Broken Arrow; therefore, they were downgraded to incidents. A list of these incidents is included, along with the reasons they were downgraded. Note that these do not comprise a complete list of incidents. Rather, it is a list of only those incidents that have appeared on one or more earlier lists and were classified there as Broken Arrows.

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NUCLEAR WEAPON ACCIDENT DEFINITION

An unexpected event involving nuclear weapons or radioactive nuclear weapons components that results in any of the following:

- (1) Accidental or unauthorized launching, firing, or use by US forces of US Supported Allied Forces, of a nuclear capable weapons system which could create the risk of an outbreak of war.
- (2) Nuclear Detonation.
- (3) Nonnuclear detonation or burning of a nuclear weapon or radioactive nuclear weapon component.
 - (a) Fully Assembled Nuclear Weapon
 - (b) Unassembled Nuclear Weapon
 - (c) Nuclear Weapon Components
- (4) Radioactive Contamination
- (5) Seizure, theft or loss of a nuclear weapon or radioactive nuclear weapon component, including jettisoning.
- (6) Public Hazard, Actual or Implied. (NOTE: Accidents that involve major mechanical damage to the weapon without burning, explosion, or contamination are listed in this category).

Each accident in the list includes a CATEGORY in its description. This category refers to the paragraph numbers used in this definition.

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BROKEN ARROW ACCIDENTS

13 February 1950 - Pacific Ocean (off Princess Royal Island, British Columbia)

At 2344 hours, a B-36 developed mechanical difficulty which caused the shutdown of 3 engines (#1-2-5). [redacted] bomb [redacted] dummy capsule was jettisoned at 8000 ft and was observed to detonate over water [redacted] were installed at the time it was jettisoned. The aircraft was enroute from Eielson AFB, Alaska to Carswell AFB, Texas. The crew bailed out after the weapon was jettisoned. The aircraft wreckage was located one year later on Vancouver Island. CATEGORY: 3b

11 April 1950 - Manzano Base, Albuquerque, NM

A B-29 carrying [redacted] bomb w/o the capsule installed crashed and burned after takeoff from Kirtland AFB, NM. The aircraft burned and all crew members were killed. The weapon was burned but there was no detonation or contamination. The detonators were installed. The residue of pit, case and fusing and firing components were recovered. CATEGORY: 3b

13 July 1950 - Lebanon, Ohio

A B-50 aircraft with [redacted] bomb without the capsule crashed. The HE detonated on impact and the 4 officers and 12 airmen on board were killed. No components were recovered. CATEGORY: 3b

(b)(1)
(b)(3)
5 August 1950 - Fairfield Suisun Fld (now Travis AFB)

A B-29 aircraft crashed on takeoff due to inability to retract gear and two runaway props. [redacted] bomb without capsule was on board and an HE detonation occurred killing 17 personnel, including Gen Travis, and injured 60 others. CATEGORY: 3b

10 November 1950 - [redacted]

A B-50 aircraft with [redacted] bomb on board without the capsule installed was jettisoned during an emergency situation from 10,500 feet. The HE detonation was an airburst. CATEGORY: 3b

10 March 1956 - At Sea: Atlantic

A B-47 aircraft enroute from Mac Dill AFB, Florida to [redacted] crashed at sea due to unknown causes. Two war reserve [redacted] were on board. No weapons were on board. The plane, crew and capsules were lost. CATEGORY: 5

27 July 1956 - [redacted]

The pilot lost control of a B-47 aircraft and crashed into a storage magazine. The impact pushed [redacted] The aircraft caught fire and the fire damaged [redacted] Local fire department personnel assisted in the fire fighting. No capsules were inserted in the weapons. CATEGORY: 3b

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3.91, 3.92, 3.93, 3.94, 3.95, 3.96, 3.97, 3.98, 3.99, 4.00, 4.01, 4.02, 4.03, 4.04, 4.05, 4.06, 4.07, 4.08, 4.09, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.28, 4.29, 4.30, 4.31, 4.32, 4.33, 4.34, 4.35, 4.36, 4.37, 4.38, 4.39, 4.40, 4.41, 4.42, 4.43, 4.44, 4.45, 4.46, 4.47, 4.48, 4.49, 4.50, 4.51, 4.52, 4.53, 4.54, 4.55, 4.56, 4.57, 4.58, 4.59, 4.60, 4.61, 4.62, 4.63, 4.64, 4.65, 4.66, 4.67, 4.68, 4.69, 4.70, 4.71, 4.72, 4.73, 4.74, 4.75, 4.76, 4.77, 4.78, 4.79, 4.80, 4.81, 4.82, 4.83, 4.84, 4.85, 4.86, 4.87, 4.88, 4.89, 4.90, 4.91, 4.92, 4.93, 4.94, 4.95, 4.96, 4.97, 4.98, 4.99, 5.00, 5.01, 5.02, 5.03, 5.04, 5.05, 5.06, 5.07, 5.08, 5.09, 5.10, 5.11, 5.12, 5.13, 5.14, 5.15, 5.16, 5.17, 5.18, 5.19, 5.20, 5.21, 5.22, 5.23, 5.24, 5.25, 5.26, 5.27, 5.28, 5.29, 5.30, 5.31, 5.32, 5.33, 5.34, 5.35, 5.36, 5.37, 5.38, 5.39, 5.40, 5.41, 5.42, 5.43, 5.44, 5.45, 5.46, 5.47, 5.48, 5.49, 5.50, 5.51, 5.52, 5.53, 5.54, 5.55, 5.56, 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22 May 1957 - Kirtland AFB, NM

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A B-36 aircraft carrying [REDACTED] bomb without a capsule was on landing approach at approximately 1700 feet when the weapon fell through the bomb bay door as a result of human error. The weapon impacted 4.5 miles south of Kirtland AFB, NM and the resultant HE detonation produced a crater 25 ft in diameter and 12 ft deep. There was no loss of life, aircraft damage or contamination. The flight originated at Biggs AFB, Texas. CATEGORY: 3b

29 July 1957 - At Sea: Atlantic

A C-124 aircraft enroute from Dover, Delaware [REDACTED] lost power in two engines. Two [REDACTED] bombs without capsules were on board and were jettisoned at approximately 1500 ft and 2500 ft respectively off the coast of New Jersey [REDACTED]. There was no detonation and the weapons were never found. The aircraft landed near Atlantic City, NJ with one [REDACTED] and one capsule on board. CATEGORY: 5

11 October 1957 - Homestead AFB, Florida

(b)(1)
(b)(3)
A B-47 crashed on takeoff approximately 3800 ft off the end of the runway killing all crew members. [REDACTED] bomb and [REDACTED] capsule in an M102 carry case (birdcage) were on board. There were two 100 lb order detonations and the weapon burned for 4 hours. The weapon was recovered in a melted condition and the capsule was recovered. There was no contamination. CATEGORY: 3b

[REDACTED]

31 January 1958 - [REDACTED]

A B-47 aircraft on Coco Alert had the left wheel collapse and a fuel tank caught fire. [REDACTED] bomb with [REDACTED] device in the [REDACTED] position burned for 7 hours and melted. [REDACTED]

[REDACTED] In addition, the contamination was carried off base. The only decontamination was gross removal of contaminated wreckage. CATEGORY: 3

5 February 1958 - Hunter AFB, Savannah River, GA

A B-47 carrying [REDACTED] bomb without a capsule was involved in a mid-air collision with an F86 jet fighter. After three unsuccessful attempts to land at Hunter AFB, GA, the weapon was jettisoned into the Savannah River [REDACTED]. The weapon was in a configured for transport and no nuclear detonation was possible. There was no contamination and the weapon was never recovered.

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11 March 1958 - Florence, South Carolina

A B-47 aircraft carrying [REDACTED] bomb dropped the weapon at Mars Bluff, SC (5 to 6 mi east of Florence, SC) when a crewman accidentally pulled the bomb release. There was no capsule inserted in the weapon. The high explosive detonated on impact damaging six buildings, 1 church, and injuring several personnel. CATEGORY: 3b

4 November 1958 - Dyess AFB, Texas

A B-57 aircraft caught fire after takeoff (1500 ft) due to a faulty JATO bottle and crashed. The aircraft was carrying [REDACTED] bomb and an HE detonation occurred at impact of the aircraft. The resultant crater was 35 ft in diameter and 6 ft deep. [REDACTED] Three crew members ejected and one was killed in the crash. CATEGORY: 3b

26 November 1958 - Chenault AFB, Louisiana

(b)(1)
(b)(3) A B-47 aircraft carrying [REDACTED] bomb caught fire on the ground due to an inadvertent JATO bottle discharge. The weapon was destroyed by fire [REDACTED] There was no HE detonation [REDACTED] contamination was found in the vicinity of the weapon residue only. There was a minor explosion of undetermined origin during the accident. CATEGORY: 3a

18 January 1959 - [REDACTED]

An F-100D aircraft on practice alert was carrying [REDACTED] bomb. When the starter button was pushed, three fuel tanks were energized. One tank was ruptured and caught fire. [REDACTED] There was no detonation or contamination. CATEGORY: 3b

6 July 1959 - Barksdale AFB, Louisiana (Shreveport)

A C-124 aircraft carrying [REDACTED] bombs crashed and burned on takeoff, 3500 ft off the end of the runway. Aircraft had achieved an altitude of 40 ft prior to the crash. There was no detonation but [REDACTED] one weapon was destroyed by fire. There was limited [REDACTED] over a 2 ft sq area below the weapon. There were no crew injuries. CATEGORY: 3a

25 September 1959 - Whidby Island, Washington

A PSM aircraft carrying [REDACTED] without capsule ditched off Whidby Island. The weapon was never recovered. CATEGORY: 3

15 October 1959 - Hardinsburg, Kentucky

2 A B-52 aircraft was involved in a mid-air collision with a KC-135 tanker at approximately 32,000 ft. Two [REDACTED] bombs were aboard the B-52 and were broken loose and thrown 20 ft when the plane crashed. There was no detonation or contamination. One weapon was partially burned in the after body. Both weapons were recovered. Four crew members ejected and four others were killed. CATEGORY: 6

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7 June 1960 - McGuire AFB, New Jersey

A BOMARC missile [redacted] carrying a [redacted] warhead burned on the ground due to failure of the [redacted] helium reservoir. The explosion of the reservoir ignited the fuel tanks. The warhead was destroyed by fire [redacted]. There was no HE detonation but contamination existed below the weapon and in a 100 ft long area caused by runoff from the fire fighting effort. CATEGORY: 3a

24 January 1961 - Goldsboro, North Carolina

A B-52 aircraft carrying two [redacted] bombs crashed due to structural failure of the right wing. Aircraft broke apart and weapons were dropped; one with the parachute deployed and one free fall. One weapon received little impact damage. The other broke apart at impact and [redacted] was deeply buried (more than 50 feet) and was not recovered. There was no detonation or contamination and five of the eight crew members survived the crash. CATEGORY: 6

14 March 1961 - Yuba City, California

(b)(1)
(b)(3)
A B-52F aircraft carrying two [redacted] bombs experienced a failure of the crew compartment pressure system which forced the aircraft to descend to 10,000 ft altitude. The additional fuel consumed at this altitude caused the aircraft to run out of fuel prior to a tanker arrival. The crew bailed out at 10,000 ft and the commander bailed out at 4,000 ft. The weapons were torn loose from the aircraft at impact but there was no detonation or contamination. CATEGORY: 6

13 November 1963 - (AEC) Medina Base, Texas

An AEC izloo explosion involving 123,000 lbs of HE [redacted] resulted in injury to three personnel and the filing of more than 1400 legal claims. [redacted]

CATEGORY: 3b

13 January 1964 - Cumberland, Maryland

A B-52D aircraft carrying two [redacted] bombs crashed 19 miles SW of Cumberland, Md [redacted] due to structural failure (tail broke off). There was no detonation or contamination but weapon recovery was hampered by sub-zero weather and snow. Both weapons were recovered and had received major damage. Two members of the crew survived and three were killed. CATEGORY: 6

5 December 1964 - Ellsworth AFB, South Dakota

The retrorocket of an LGM 30B Minuteman I missile on launch facility L-02 were fired by stray voltage during checkout [redacted]

[redacted] The missile had a [redacted] warhead on board. The RV fell 75 feet and received major damage. There was no detonation or contamination. CATEGORY: 6

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8 December 1964 - Bunker Hill AFB, Indiana

A B-58 with five nuclear weapons on board [REDACTED] skidded off an icy runway on takeoff, caught fire and burned. There was no detonation but [REDACTED] was damaged. Contamination consisted of slight contamination on the weapons and negligible contamination on the runway. CATEGORY: 3a

11 October 1965 - Wright Patterson AFB, Ohio

A C-124 aircraft carrying [REDACTED] developed a fire in the aft end of the refueling trailer due to an inadvertent disconnect of the refueling apparatus. The components were destroyed and there was minor contamination. CATEGORY: 3c

5 December 1965 - At Sea, Pacific [REDACTED]

(b)(1)
(b)(3)
An A-4 aircraft carrying [REDACTED] bomb rolled off elevator #2. The pilot, aircraft and weapon were lost. CATEGORY: 5

17 January 1966 - Palomares, Spain

A B-52 aircraft carrying four [REDACTED] bombs was involved in a mid-air collision with a KC-135 tanker. The B-52 crashed near Palomares. One weapon fell into the Mediterranean sea and was recovered on 7 April 1966. The other three weapons fell on land, two detonated and one was recovered intact. There was extensive contamination. Seven crew members were killed and four survived. CATEGORY: 3a

21 January 1968 - Thule, Greenland

A B-52 aircraft from Plattsburgh AFB, New York caught fire and crashed on the ice. Four [REDACTED] bombs were on board. Four low-order detonations destroyed the weapons and produced extensive contamination. One crew member was killed. CATEGORY: 3a

Late Spring 1968 - At Sea, Atlantic

[REDACTED]

19 September 1980 - Damascus, Arkansas

A Titan II missile with [REDACTED] warhead mounted developed a fuel leak when a socket wrench was dropped and punctured the skin. Fuel escaped and subsequently exploded destroying the silo. The missile explosion threw the warhead approximately 500 ft from the silo. The warhead sustained extensive mechanical damage. There was no warhead detonation or contamination. One crewman was killed and several were hospitalized. CATEGORY: 6

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INCIDENTS

8 May 1952 - Eielson AFB, Alaska

A B-50 aircraft containing a MK 8 operational suitability test (OST) item without nuclear materials, inadvertently jettisoned the test item. It was not a war reserve weapon and there was no detonation. The drop was within the limits of Ladd AFB Bombing and Gunnery Range, approximately 5-1/2 miles southwest of Eielson AFB. The test item was never recovered. Since no nuclear weapon was involved, this should not be classified as a nuclear weapons incident.

March 1956 - Loring AFB, Maine

A B-36 aircraft carrying [REDACTED] bomb dropped the weapon on the runway during run-up procedures. There was no detonation or burning of the weapon but the weapon experienced internal damage. [REDACTED] Since the weapon was damaged, this should be classified as a nuclear weapon significant incident. (BENT SPEAR)

December 1957 - Castle AFB, California

[REDACTED] weapon was inadvertently released during downloading. A crewman hit the bomb release instead of the bombay door release. There was no burning or detonation but the weapon was damaged. Since the weapon was damaged, this should be classified as a nuclear weapon significant incident. (BENT SPEAR)

19 October 1961 - [REDACTED]

[REDACTED] There was no detonation or contamination. Since replacement and rework of the warhead was required. This should be classified as a nuclear weapon significant incident. (BENT SPEAR)

4 November 1961 - (AEC) Winslow, Arizona

An AEC shipment of weapon prototype components was involved in a vehicle fire. There was no burning, detonation or contamination but the trailer was destroyed. The components of the shipment consisted of 85 pounds of D-38. Since no weapons or nuclear components were involved, this should not be classified as a nuclear weapons accident.

13 March 1962 - Forbes AFB, Kansas

An Atlas E missile burned and collapsed. The attached [REDACTED] warhead did not detonate or burn but was damaged during the missile fall. This should be classified as a nuclear weapon significant incident. (BENT SPEAR)

3 December 1962 - (AEC) Marietta, Georgia

A train with two ATMK cars containing [REDACTED] was derailed. The cargo within the cars remained undisturbed from the original shored position. The weapons were undamaged. This should be classified as a nuclear weapon significant incident. (BENT SPEAR)

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20 January 1966 - Mayport Naval Air Station, Florida

(b)(1)
(b)(2)
A [redacted] missile separated from its booster [redacted] and fell 8 ft into the magazine. There was no detonation or fire but the warhead was dented. The warhead was returned to the AEC for repair. This should be classified as a nuclear weapon significant incident. (BENT SPEAR)

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